1711

PATENT APPLICATION
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SBU-114

#14 Response
10/10/02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN APPLICATION OF	)
	) GROUP NO: 1711
TAKANORI CHIBA ET AL	)
	) EXAMINER: J. M. COONEY
SERIAL NO.: 09/807,322	)
	) RESPONSE TO PAPER NO. 13
FILED: FEBRUARY 13, 2002	)
	)
TITLE: METHOD OF PREPARING RIGID POLYURETHANE FOAM	)
	)

RESPONSE

Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

The Office Action on the above-identified application dated July 2, 2002 has been received and its contents noted. The following is in response thereto.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on 10/02/02

Date

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Name of applicant, assignee or Registered Representative

Signature

October 2, 2002

Date

The present invention relates to a process for the production of a rigid polyurethane foam in which an isocyanate is reacted with an isocyanate-reactive composition. (Claims 5-11) The isocyanate-reactive composition includes (1) a polyester and/or polyether polyol which is poorly compatible with cyclopentane, (2) cyclopentane, (3) water, (4) a surfactant and (5) a catalyst. A key feature of this process is the use of a dispersion of cyclopentane in the isocyanate-reactive composition.

The present invention also relates to an apparatus for dispersing the cyclopentane blowing agent in the isocyanate-reactive composition. (Claims 12-14) This apparatus includes a polyol tank and a high pressure circulating line in which a static mixer is present.

Claims 5-14 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The specific basis for this rejection is that it can't be determined what degree of compatibility is encompassed by the terminology "having poor compatibility with cyclopentane".

Applicants respectfully traverse this rejection.

Claims must be read in light of the teachings of the specification. The specification teaches at page 3, lines 1-5:

> The phrase "having poor compatibility with cyclopentane" means that the solubility of cyclopentane in the polyol is 20 g or below, for example 10 g or below, and particularly 5 g or below. The term "solubility" means the number of grams of cyclopentane which are soluble in 100 g of the polyol at 25°C.

Applicants submit that when their claims are read in light of the above-quoted teaching, one skilled in the art would know with the required degree of certainty the subject matter being claimed. Claims 5-14 are therefore sufficiently definite to satisfy the requirements of 35 U.S.C. § 112, second paragraph.

Withdrawal of this rejection is therefore requested.

Claims 5-11 also stand rejected under 35 U.S.C. § 102(b) as being anticipated by DE 19,708,570. Applicants respectfully traverse this rejection.

No English language equivalent of this reference was found by Applicants. An English translation of the reference was therefore obtained. A copy of that English translation of the reference is enclosed. It is this translation of the DE 19,708,570 reference to which Applicants will refer in their discussion of this rejection.

DE 19,708,570 discloses a process for the production of foam materials containing polyisocyanate polyaddition products using a foaming agent which includes a C_3 or C_4 ring.

It is indicated in the Office Action that this reference

> ... discloses preparations of rigid foams from polyols blended with cyclopentane and water wherein the cyclopentane is dispersed in the polyol component before reaction in a manner which reads on the processes of the claims. (at page 3, lines 3-5)

Applicants respectfully disagree.

The only teaching in DE 19,708,570 with respect to combination of the blowing agent with the polyol is that solutions or emulsions containing foaming agents are produced by intensely mixing the polyol and blowing agent together. (See page 11, first full paragraph of the enclosed translation.)

Applicants' invention requires that the cyclopentane blowing agent be "dispersed" in the isocyanate-reactive component.

DE 19,708,570 does not, however, disclose a specific example of a polyol/cyclopentane emulsion, nor does it suggest that there would be any advantage to the use of an emulsion. The difference between a dispersion and a solution is demonstrated in the Examples given in Applicants' specification.

More specifically, a dispersion of cyclopentane in polyol was used in Examples 1-3. A solution of cyclopentane in polyol was used in Comparative Examples 1 and 2. As can be seen from the data presented in Table 1 (at page 13 of the specification), the thermal conductivity at 10°C and 0°C of the foams produced in accordance with the claimed invention was better than that of the foams produced with the cyclopentane solution.

The use of cyclopentane in the form of a dispersion is a key feature of the present invention. DE 19,708,570 does not teach this key feature of Applicants' invention. DE 19,708,570 does not therefore disclose Applicants' claimed invention in the manner necessary to support a proper rejection under 35 U.S.C. § 102(b).

Applicants would further note that DE 19,708,570 teaches that it is the use of the required C_3 or C_4 ring hydrocarbon blowing agents to which the improved properties sought by the inventors are attributed. (See page 3, paragraphs 4-7 of the enclosed translation.)

In fact, it is shown in the comparative Examples 1 and 6 of DE 19,708,570 that foams produced with only cyclopentane as the blowing agent did not have the combination of properties sought by the inventors.

Applicants' invention does not require these blowing agents which the reference teaches to be critical.

An invention which does not require a feature taught to be critical in the prior art is not taught by that prior art. Applicants' invention is not therefore taught by DE 19,708,570 in the manner required by 35 U.S.C. § 102(b) to support a rejection of Claims 5-11.

Withdrawal of this rejection is therefore requested.

Claims 5-11 further stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hickey et al (U.S. 6,359,022). Applicants respectfully traverse this rejection.

Hickey et al discloses aromatic polyester polyols which are compatible with pentane and resin blends having increased phase stability and lower viscosity which do not require nonionic surfactants.

Applicants' invention requires a polyol which has "poor compatibility" with cyclopentane.

The polyols useful in Applicants' invention are of the same type which Hickey et al teaches to be unsuitable for use in the blends disclosed in that reference.

An invention which does not require a critical feature of the prior art is not anticipated by that prior art. Applicants' invention does not require the polyester polyols which are compatible with pentane that are required by Hickey et al. Applicants' invention is not therefore anticipated by the teachings of Hickey et al.

Withdrawal of this rejection is therefore requested.

Claims 12-14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Barth et al (U.S. 4,275,172). Applicants respectfully traverse this rejection.

Barth et al discloses frothable thermosetting polyurethane-forming compositions. This reference is cited for its disclosure of an apparatus for blending reactive mixtures in polyurethane preparations.

Applicants are not, however, claiming an apparatus for blending isocyanate and polyol components of the type disclosed by Barth et al. Applicants are claiming an apparatus in which a polyol dispersion containing cyclopentane is produced. The polyol and cyclopentane are not being reacted. The cyclopentane is being dispersed in the polyol.

The polyol tanks **29** and **30** shown in Figure 1 of Barth et al do not have the high pressure circulating line in which a static mixer is present that is required in Applicants' claimed invention.

Barth et al does not therefore teach Applicants' apparatus claimed in Claims 12-14 in the manner necessary to support a rejection under 35 U.S.C. § 102(b).

Withdrawal of this rejection is therefore requested.

In view of the above remarks, reconsideration and allowance of Claims 5-14 are respectfully requested.

Respectfully submitted,

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